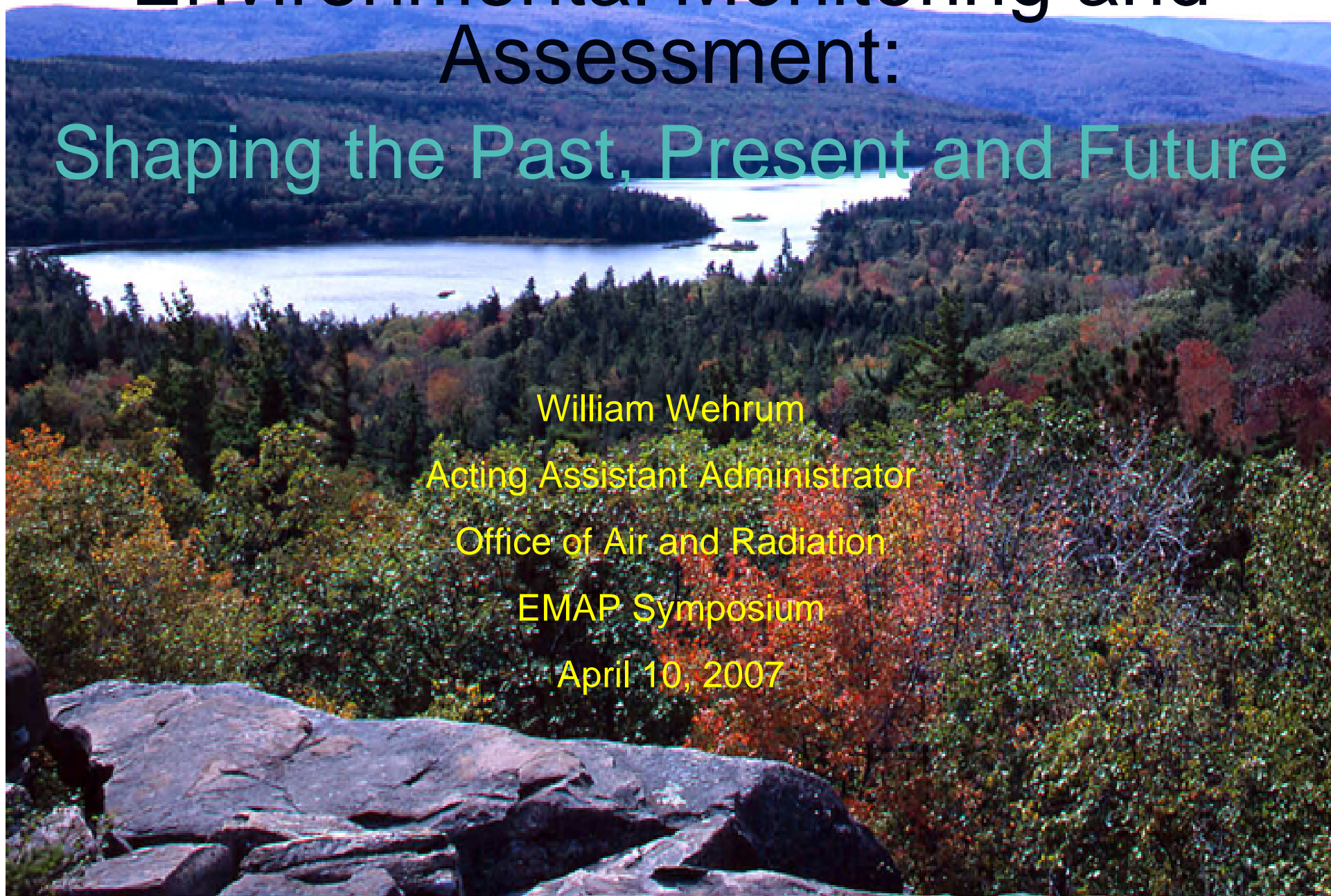


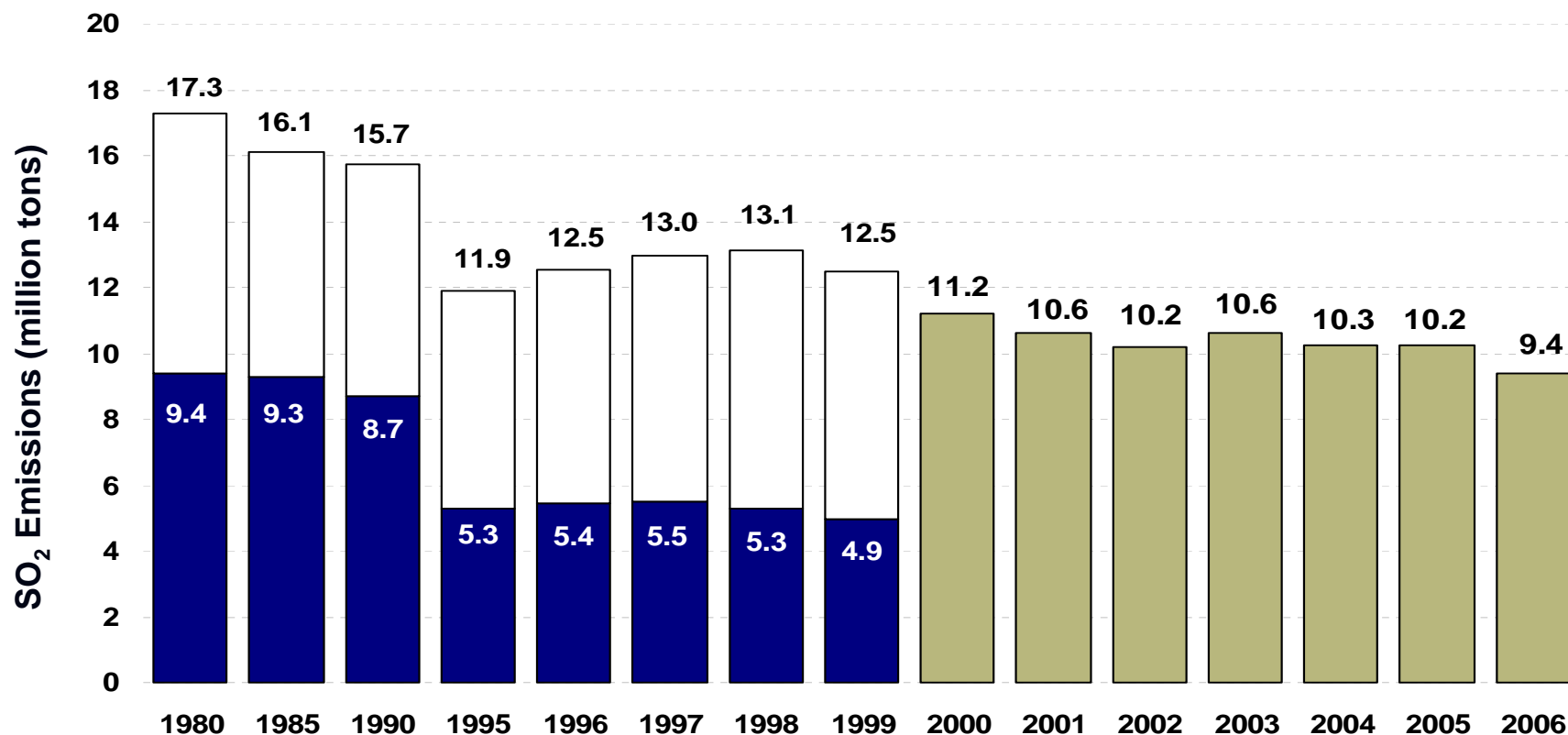
US EPA ARCHIVE DOCUMENT

Environmental Monitoring and Assessment: Shaping the Past, Present and Future

William Wehrum
Acting Assistant Administrator
Office of Air and Radiation
EMAP Symposium
April 10, 2007



Acid Rain Program SO₂ Emissions 1980 - 2006

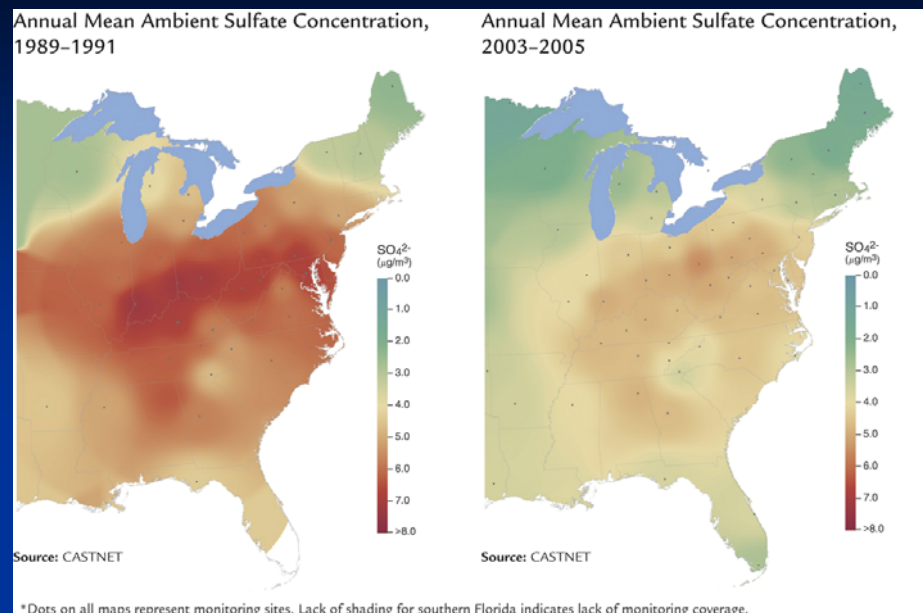


■ Phase I sources ■ all sources
□ Phase II sources

Note: Data for 2006 are preliminary and will be final Summer 2007

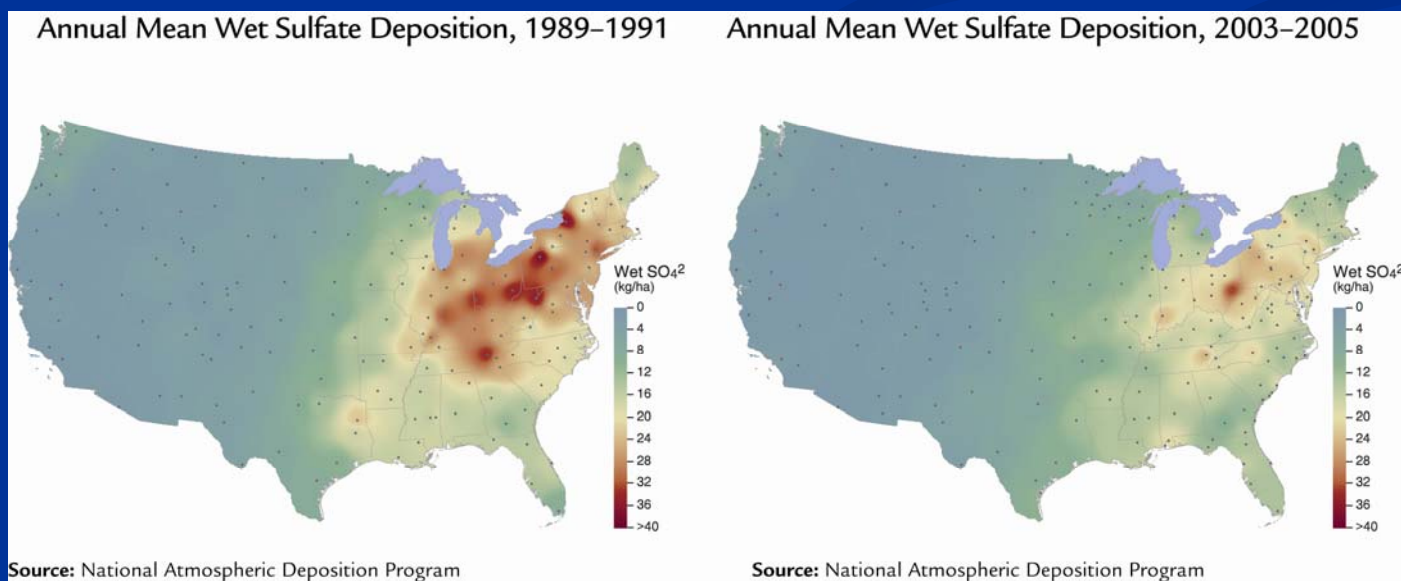
Monitored Reductions in Ambient Sulfate Concentrations

CASTNET



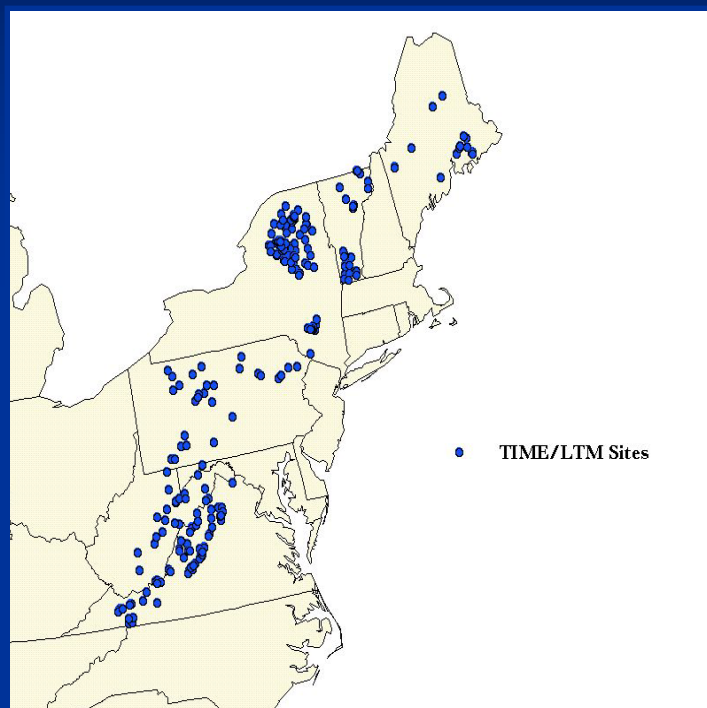
Monitored Reductions Wet Inorganic Sulfate Deposition

NADP



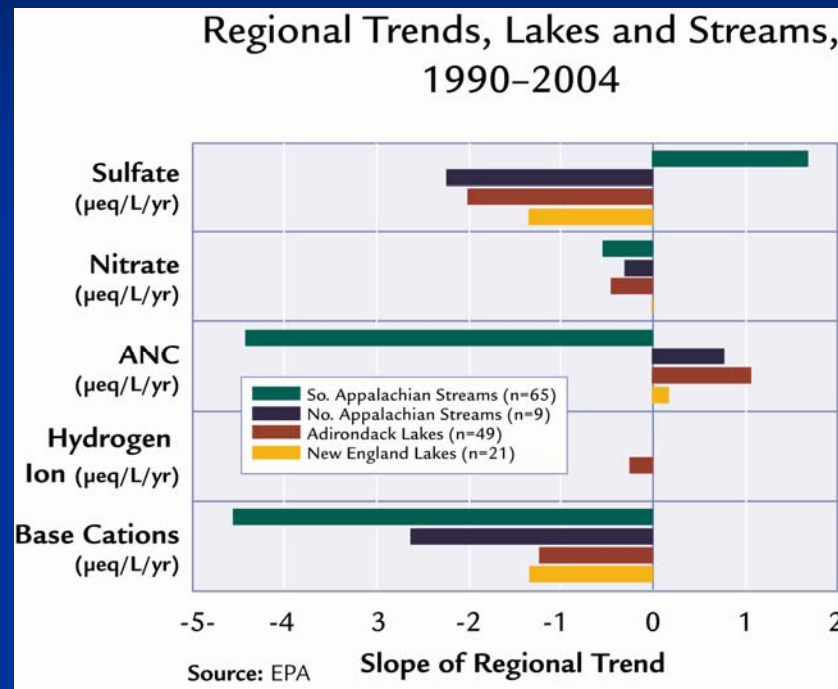
What are the Impacts of Deposition Changes on Ecosystems: Long-term Surface Water Monitoring Chemistry Trends

TIME/LTM (Surface Water Monitoring)



- Regional declines in surface water sulfate can be directly linked to declines in emissions and deposition of sulfur
- In three regions, one-quarter to one-third of lakes and streams previously affected by acid rain are no longer acidic

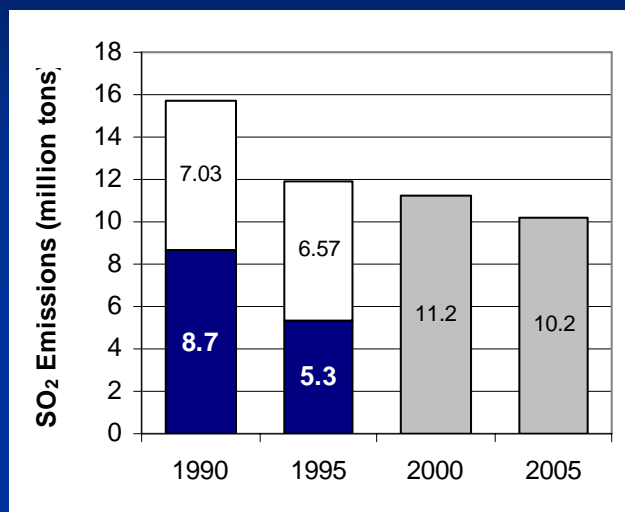
Regional Trends in Lakes and Streams Acidity, 1990-2004



- Regional Acid Neutralizing Capacity (ANC), a key indicator of recovery, did not change significantly in New England or in Blue Ridge streams
- Surface water nitrate concentrations are largely unchanged except in Adirondacks and Northern Appalachian Plateau

Putting it All Together: The Acid Rain Example

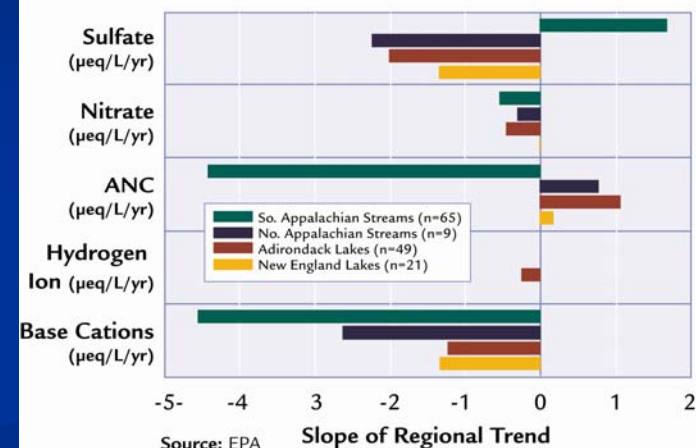
SO₂ Emissions Under the ARP



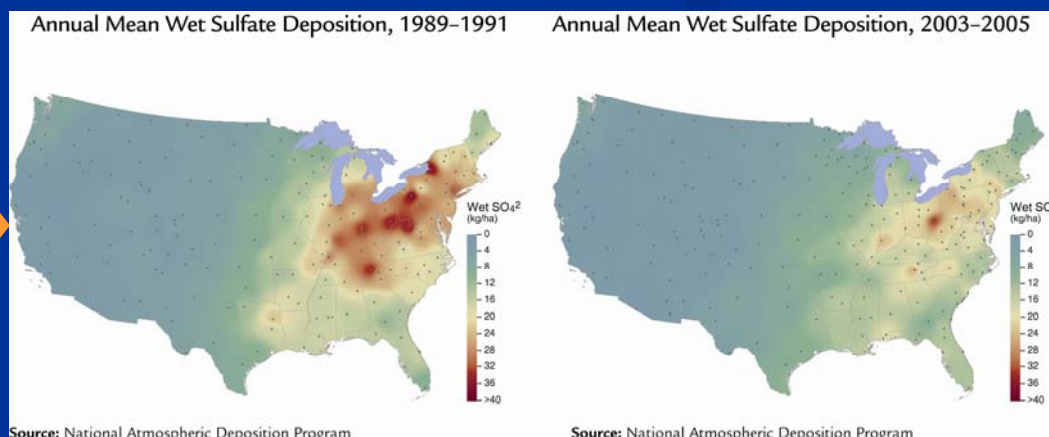
Assessing
Environmental
Change Over
Time and Space
to Demonstrate
Program
Effectiveness

Acid Lake Response

Regional Trends, Lakes and Streams, 1990-2004



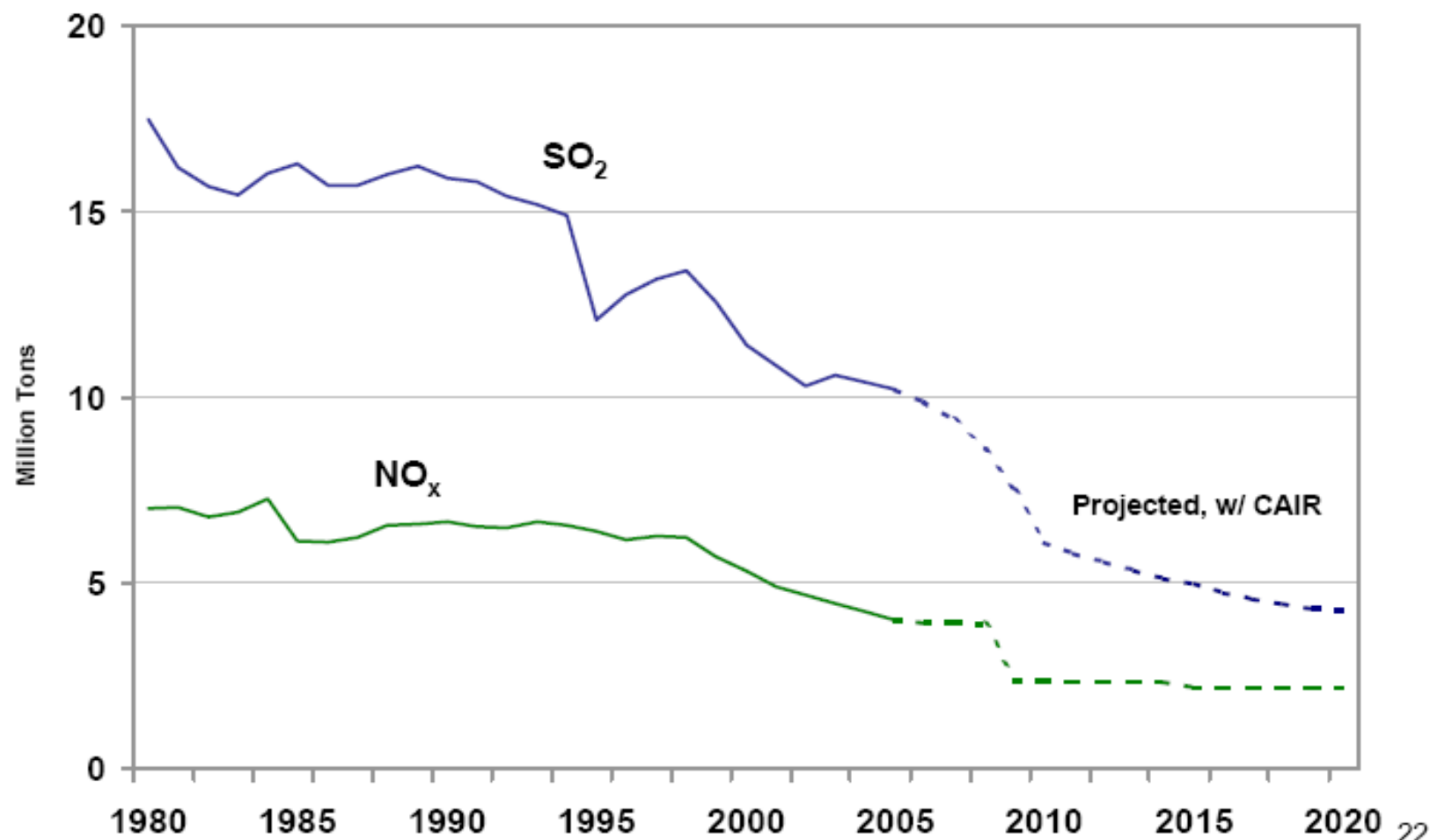
Wet Sulfate Deposition



1989-1991

2003-2005

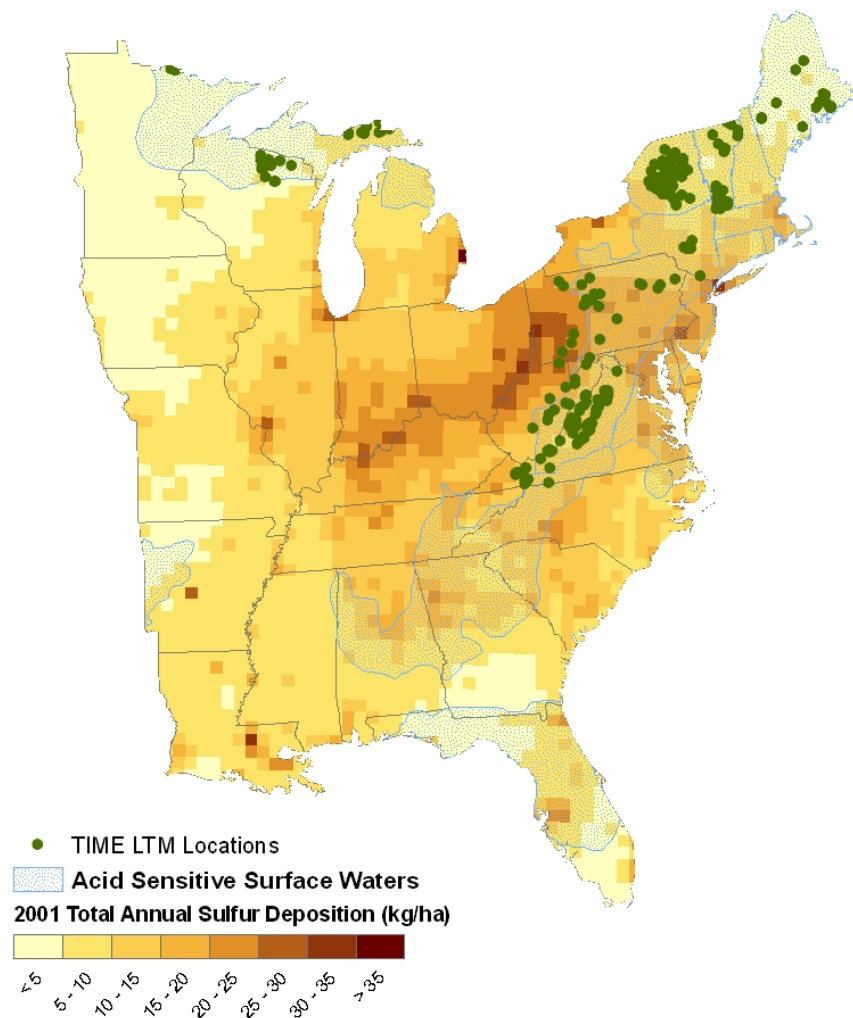
Nationwide SO_2 and NO_x Emissions from the Power Sector



Source: EPA

Projected Change in Sulfur Deposition with CAIR/CAMR/CAVR Acid Sensitive Ecosystems

Total Sulfur Deposition Estimated for 2001
Relative to Acid Sensitive Surface Waters



Total Sulfur Deposition Estimated for 2020
With Current Air Programs
Relative to Acid Sensitive Surface Waters

